

Title: AIR BLOWERS AND VACUUM PUMPS RMK-1, RMK-2, RMK-3, AND RMK-4

Source: None given

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AIR BLOWERS AND VACUUM PUMPS RMK-1, RMK-2, RMK-3, AND

RMK-4

The RMK pumps (Fig 293) are produced in four type sizes and are used for air feed (air blowing) or as auxiliary equipment in the operation of centrifugal pumps for creating a vacuum by suction. The vane wheel of the pumps, situated eccentrically in a cylindrical housing, when rotating, throws off the water fed into the pump onto the wall of the housing and forms a water collar. At various angles of rotation of the wheel, the vane is submerged in this collar at varying depth; thus, the space in the compartment free of water, bounded by two adjacent vanes, the ^{vane} of the wheel and the inner surface of the water collar, varies from zero to maximum and back. As the volume of the compartment is increased, air is sucked into the wheel via the intake window in the housing covers; as the volume is decreased the air is compressed and expelled through the delivery windows.

Viewed from the motor side, the wheel rotates counterclockwise.

Maximum pressure at the delivery opening reaches 1-2 at, allowing the vacuum pumps to be used also as air blowers.

Before the pump is started, water trap and pump are filled with water to the level of the overflow pipe; the water is fed to the stuffing box from the main water line at a pressure of 1.5-2 at. The pump is started and stopped with the valves and intake line slide valve closed. The amount of feed water for the water wheel must be sufficient to secure maximum efficiency and vacuum with minimum power consumption.

The quantity of water fed into the water trap from the main water line must maintain the temperature of the outgoing water at a level of 25-30° C. A storage tank provided with an overflow pipe serves to feed the pump with water.

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Water feed to the stuffing box must be so regulated that the stuffing box packing passes water from the pump in a steady drip or fine stream.

All pump parts except the shaft are cast iron. The draft, on two bearings is steel, with hydraulic seal at the point where it passes through the pump cover.

The stuffing box packing is soft, cotton (not hemp). Bearing lubricant is consistent.

Technical Characteristics of RMK Air Blowers

(Table, middle of p 275)

Type	Pressure					
	1.0 at		0.8 at		0.5 at	
	Eff m ³ /min	hp	Eff m ³ /min	hp	Eff m ³ /min	hp
RMK-1	—	—	0.6	5.6	1.0	4.9
RMK-2	2.0	12.6	2.8	12.5	3.8	10.5
RMK-3	9.0	30	10	24	10.9	18.6
RMK-4	16	85.5	20	87	26	85.5

Type	Maximum Pressure ast	RPM	Motor power Kw	Total water con- sumption l/min	Wt	Kg
					pump	gas tank
RMK-1	1.0	1450	4.5	10	93	50
RMK-2	1.4	1450	13	30	109	50
RMK-3	2.1	960	40	70	475	84.5
RMK-4	2.1	720	80	100	1028	84.5

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Technical Characteristics of Waterwheel Vacuum Pumps

(Table, bottom p 275)

Type	Eff		Coeffi- cient of useful action, isother- mic, %	Eff		Coeffi- cient of useful action, isother- mic, %	Eff		Coeffi- cient of useful action, isother- mic, %
	m ³ /min	hp		m ³ /min	hp		m ³ /min	hp	
RMK-1	—	—	—	0.15	5.0	12	0.5	4.95	21
RMK-2	0.1	8.9	—	0.6	9.0	32.5	1.55	0.25	36
RMK-3	1.0	21	27.5	2.0	23	34	4.5	24.3	39
RMK-4	2.0	57	20.6	5.0	70.6	5.6	11	78.8	29

Type	Maximum Eff		Motor Power Kw	Total water con- sumption l/min	Wt		Max. pass. vacuum %
	m ³ /min	RPM			Pump	Water tank	
RMK-1	1.5	1450	4.5	10	93	35	90
RMK-2	4.2	1450	10	20	109	35	92
RMK-3	11.5	960	29	60	475	67	97
RMK-4	27	720	70	108	1028	67	96

- NOTES: 1. Efficiency (Eff) typifies volumetric consumption relative to intake conditions at P = 10,000 mm (water column) and 0° C.
2. Vacuum in percent is the relationship of the degree of discharge to barometric pressure.

Rotary Vane Pump RM-70

The RM-70 pump (Fig 297) is designated for transferring oil with a temperature up to 40° C. Attainable lift is 3 m.

The pump is a horizontal vane pump with automatic intake. In its central section, the shaft has two radial grooves in which are situated

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movable textolite plates. It is mounted eccentrically with respect to the pump housing, and when the shaft rotates the space between the vanes (plates) varies, which forms the basic principle of the pump's operation.

The shaft turns ~~on~~ⁱⁿ two slide friction bearings with babbited bronze bushings. Lubricating oil flows from the working section of the pump along grooves.

The pump housing^{is} cast iron; the shaft is of steel. The suction and pressure connections open upwards facilitating the presence of liquid in the housing at all times and obviating necessity of priming before starting.

The pump shaft is joined by a clutch directly with the electric motor shaft.

Technical Characteristics

Efficiency - m ³ /hr	10
Max pressure - m water column	40
RPM	960
Motor power, Kw	45
Wt of pump, kg	52

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Fig 294 (p 276) Drawing of air blower and vacuum pump RMK-2; 1 - suction and delivery connection (otv = opening)

Fig 295 (p 277) RMK-3

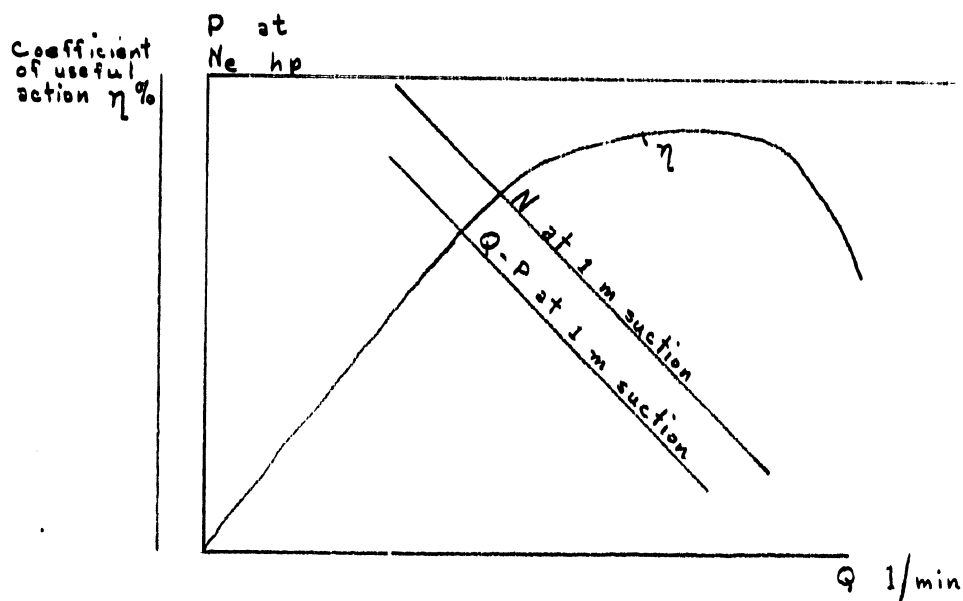
1. Suction connection 125 mm;
2. Pressure connection 76 mm.

Fig 296 (p 278) RMK-4; 1. Suction connecting pipe.

Fig 297 (p 279) Drawing of rotary vane pump RM-70;

1. Suction and pressure connections.
2. Pump shaft end below coupling.

Fig 298 (p 279) Characteristic of RM-70 rotary vane pump at pump suction equal to 1 m.



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